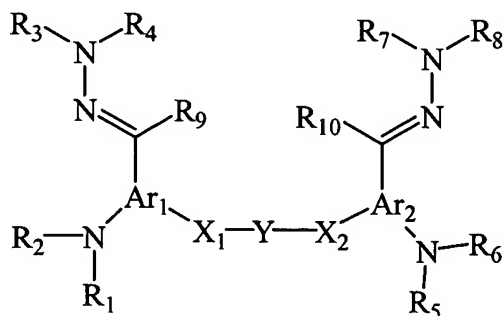


# CLAIMS

What is claimed is:

1. An organophotoreceptor comprising an electrically conductive substrate and a photoconductive element on the electrically conductive substrate, the photoconductive element comprising:

(a) a charge transport material having the formula:



where R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, and R<sub>8</sub>, are, each independently, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group;

R<sub>9</sub> and R<sub>10</sub> are, each independently, H, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group;

Ar<sub>1</sub> and Ar<sub>2</sub> are, each independently, an aromatic group;

Y comprises an arylamine group; and

X<sub>1</sub> and X<sub>2</sub> comprise, each independently, a -(CH<sub>2</sub>)<sub>m</sub>-N(R<sub>11</sub>)-N=C(R<sub>12</sub>)- group, where R<sub>11</sub> and R<sub>12</sub> are, each independently, hydrogen, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group, m is an integer between 1 and 30, inclusive, and one or more of the methylene groups is optionally replaced by O, S, N, C, B, Si, P, C=O, O=S=O, a heterocyclic group, an aromatic group, an NR<sub>a</sub> group, a CR<sub>b</sub> group, a CR<sub>c</sub>R<sub>d</sub> group, or a SiR<sub>e</sub>R<sub>f</sub> where R<sub>a</sub>, R<sub>b</sub>, R<sub>c</sub>, R<sub>d</sub>, R<sub>e</sub>, and R<sub>f</sub> are, each independently, a bond, H, a hydroxyl group, a thiol group, a carboxyl group, an amino group, an alkyl group, an alkoxy group, an alkenyl group, an alkynyl group, a heterocyclic group, an aromatic group, or a part of a ring group; and

(b) a charge generating compound.

2. An organophotoreceptor according to claim 1 wherein Y comprises a carbazole group, a julolidine group, or an (N,N-disubstituted)arylamine group.

3. An organophotoreceptor according to claim 1 wherein X and X' are, each independently, a  $-Q_1-CH_2-CH(Q_2H)-CH_2-N(R)-N=C(R')-$  group where  $Q_1$  and  $Q_2$  are, each independently, O, S or  $NR''$ , and R, R', and R'' are, each independently, hydrogen,  
5 an alkyl group, an alkenyl group, an alkynyl group, or an aromatic group.

4. An organophotoreceptor according to claim 1 wherein  $Ar_1$  and  $Ar_2$  are, each independently, an aromatic  $C_6H_3$  group.

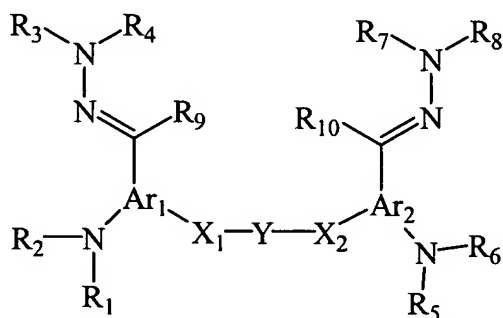
10 5. An organophotoreceptor according to claim 1 wherein the photoconductive element further comprises a second charge transport material.

6. An organophotoreceptor according to claim 5 wherein the second charge transport material comprises an electron transport compound.

15 7. An organophotoreceptor according to claim 1 wherein the photoconductive element further comprises a binder.

8. An electrophotographic imaging apparatus comprising:  
20 (a) a light imaging component; and  
(b) an organophotoreceptor oriented to receive light from the light imaging component, the organophotoreceptor comprising an electrically conductive substrate and a photoconductive element on the electrically conductive substrate, the photoconductive element comprising:

25 (i) a charge transport material having the formula



where  $R_1, R_2, R_3, R_4, R_5, R_6, R_7$ , and  $R_8$ , are, each independently, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group;

$R_9$  and  $R_{10}$  are, each independently, H, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group;

5  $Ar_1$  and  $Ar_2$  are, each independently, an aromatic group;

$Y$  comprises an arylamine group; and

$X_1$  and  $X_2$  comprise, each independently, a  $-(CH_2)_m-N(R_{11})-N=C(R_{12})-$  group, where  $R_{11}$  and  $R_{12}$  are, each independently, hydrogen, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group,  $m$  is an integer between 1 and  
10 30, inclusive, and one or more of the methylene groups is optionally replaced by O, S, N, C, B, Si, P, C=O, O=S=O, a heterocyclic group, an aromatic group, an  $NR_a$  group, a  $CR_b$  group, a  $CR_cR_d$  group, or a  $SiR_eR_f$  where  $R_a, R_b, R_c, R_d, R_e$ , and  $R_f$  are, each independently, a bond, H, a hydroxyl group, a thiol group, a carboxyl group, an amino group, an alkyl group, an alkoxy group, an alkenyl group, an alkynyl group, a  
15 heterocyclic group, an aromatic group, or a part of a ring group; and

(ii) a charge generating compound.

9. An electrophotographic imaging apparatus according to claim 8 wherein  $Y$  comprises a carbazole group, a julolidine group, or an (N,N-disubstituted)arylamine  
20 group.

10. An electrophotographic imaging apparatus according to claim 8 wherein  $X$  and  $X'$  are, each independently, a  $-Q_1-CH_2-CH(Q_2H)-CH_2-N(R)-N=C(R')-$  group where  $Q_1$  and  $Q_2$  are, each independently, O, S or  $NR''$ , and  $R, R',$  and  $R''$  are, each  
25 independently, hydrogen, an alkyl group, an alkenyl group, an alkynyl group, or an aromatic group.

11. An electrophotographic imaging apparatus according to claim 8 wherein  $Ar_1$  and  $Ar_2$  are, each independently, an aromatic  $C_6H_3$  group.

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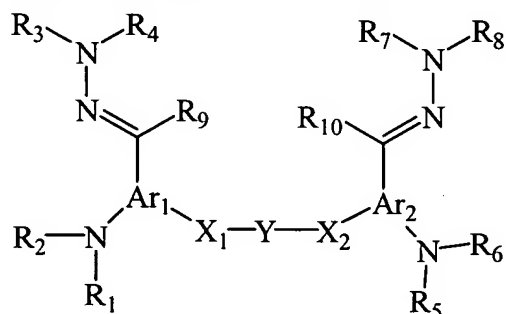
12. An electrophotographic imaging apparatus according to claim 8 wherein the photoconductive element further comprises a second charge transport material.

13. An electrophotographic imaging apparatus according to claim 12 wherein  
5 second charge transport material comprises an electron transport compound.

14. An electrophotographic imaging apparatus according to claim 8 further comprising a toner dispenser.

10 15. An electrophotographic imaging process comprising;  
(a) applying an electrical charge to a surface of an organophotoreceptor comprising an electrically conductive substrate and a photoconductive element on the electrically conductive substrate, the photoconductive element comprising

(i) a charge transport material having the formula



15 where R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, and R<sub>8</sub>, are, each independently, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group;

R<sub>9</sub> and R<sub>10</sub> are, each independently, H, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group;

20 Ar<sub>1</sub> and Ar<sub>2</sub> are, each independently, an aromatic group;

Y comprises an arylamine group; and

X<sub>1</sub> and X<sub>2</sub> comprise, each independently, a -(CH<sub>2</sub>)<sub>m</sub>-N(R<sub>11</sub>)-N=C(R<sub>12</sub>)- group, where R<sub>11</sub> and R<sub>12</sub> are, each independently, hydrogen, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group, m is an integer between 1 and  
25 30, inclusive, and one or more of the methylene groups is optionally replaced by O, S, N, C, B, Si, P, C=O, O=S=O, a heterocyclic group, an aromatic group, an NR<sub>a</sub> group, a CR<sub>b</sub>

group, a  $\text{CR}_c\text{R}_d$  group, or a  $\text{SiR}_e\text{R}_f$  where  $\text{R}_a$ ,  $\text{R}_b$ ,  $\text{R}_c$ ,  $\text{R}_d$ ,  $\text{R}_e$ , and  $\text{R}_f$  are, each independently, a bond, H, a hydroxyl group, a thiol group, a carboxyl group, an amino group, an alkyl group, an alkoxy group, an alkenyl group, an alkynyl group, a heterocyclic group, an aromatic group, or a part of a ring group; and

5 (ii) a charge generating compound.

(b) imagewise exposing the surface of the organophotoreceptor to radiation to dissipate charge in selected areas and thereby form a pattern of charged and uncharged areas on the surface;

(c) contacting the surface with a toner to create a toned image; and

10 (d) transferring the toned image to substrate.

16. An electrophotographic imaging process according to claim 15 wherein Y comprises a carbazole group, a julolidine group, or an (N,N-disubstituted)arylamine group.

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17. An electrophotographic imaging process according to claim 15 wherein X and X' are, each independently, a  $-\text{Q}_1-\text{CH}_2-\text{CH}(\text{Q}_2\text{H})-\text{CH}_2-\text{N}(\text{R})-\text{N}=\text{C}(\text{R}')$ - group where  $\text{Q}_1$  and  $\text{Q}_2$  are, each independently, O, S or  $\text{NR}''$ , and R, R', and R'' are, each independently, hydrogen, an alkyl group, an alkenyl group, an alkynyl group, or an aromatic group; and Y is a carbazole group.

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18. An electrophotographic imaging process according to claim 15 wherein  $\text{Ar}_1$  and  $\text{Ar}_2$  are, each independently, an aromatic  $\text{C}_6\text{H}_3$  group.

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19. An electrophotographic imaging process according to claim 15 wherein the photoconductive element further comprises a second charge transport material.

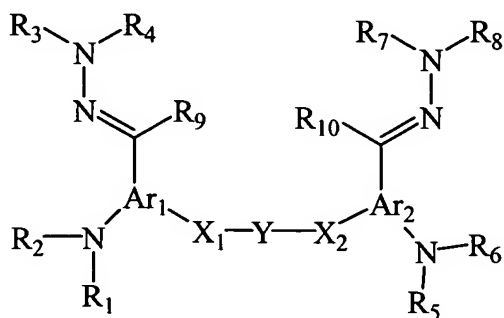
20. An electrophotographic imaging process according to claim 19 wherein the second charge transport material comprises an electron transport compound.

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21. An electrophotographic imaging process according to claim 15 wherein the photoconductive element further comprises a binder.

22. An electrophotographic imaging process according to claim 15 wherein the toner comprises colorant particles.

23. A charge transport material having the formula



where R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, and R<sub>8</sub>, are, each independently, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group;

R<sub>9</sub> and R<sub>10</sub> are, each independently, H, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group;

Ar<sub>1</sub> and Ar<sub>2</sub> are, each independently, an aromatic group;

Y comprises an arylamine group; and

X<sub>1</sub> and X<sub>2</sub> comprise, each independently, a -(CH<sub>2</sub>)<sub>m</sub>-N(R<sub>11</sub>)-N=C(R<sub>12</sub>)- group, where R<sub>11</sub> and R<sub>12</sub> are, each independently, hydrogen, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group, m is an integer between 1 and 30, inclusive, and one or more of the methylene groups is optionally replaced by O, S, N, C, B, Si, P, C=O, O=S=O, a heterocyclic group, an aromatic group, an NR<sub>a</sub> group, a CR<sub>b</sub> group, a CR<sub>c</sub>R<sub>d</sub> group, or a SiR<sub>e</sub>R<sub>f</sub> where R<sub>a</sub>, R<sub>b</sub>, R<sub>c</sub>, R<sub>d</sub>, R<sub>e</sub>, and R<sub>f</sub> are, each independently, a bond, H, a hydroxyl group, a thiol group, a carboxyl group, an amino group, an alkyl group, an alkoxy group, an alkenyl group, an alkynyl group, a heterocyclic group, an aromatic group, or a part of a ring group.

24. A charge transport material according to claim 23 wherein Y comprises a carbazole group, a julolidine group, or an (N,N-disubstituted)arylamine group.

25. A charge transport material according to claim 23 wherein X and X' are, each independently, a  $-Q_1-CH_2-CH(Q_2H)-CH_2-N(R)-N=C(R')-$  group where  $Q_1$  and  $Q_2$  are, each independently, O, S or  $NR''$ , and R, R', and R'' are, each independently, hydrogen, an alkyl group, an alkenyl group, an alkynyl group, or an aromatic group; and Y is a carbazole group.

26. A charge transport material according to claim 25 wherein  $Q_1$  and  $Q_2$  are each independently O; and R is a phenyl group.

27. A charge transport material according to claim 23 wherein  $Ar_1$  and  $Ar_2$  are, each independently, an aromatic  $C_6H_3$  group.